

IN THE SPECIFICATION

Please amend paragraph 2 (page 1 lines 9-15) as follows:

The present invention relates to a process for preparing thermoplastic transparent resin, more particularly to a process for preparing thermoplastic transparent resin having superior moisture, impact and heat resistance, natural color, and excellent transparency, which is prepared by blending ~~graft~~ transparent graft resin with methylmethacrylate-styrene-acrylonitrile (hereinafter referred to as "MSAN") copolymer after preparing the former through emulsion polymerization and the latter through bulk polymerization.

Please amend paragraph 10 (page 3 lines 20-23 and page 4 lines 1-8) as follows:

It is an object of the present invention to prepare a thermoplastic resin having excellent impact resistance, chemical resistance, processibility, superior moisture and heat resistance, natural color, etc., and extremely superior transparency by blending ~~graft~~ transparent graft resin with MSAN copolymer after preparing ~~graft~~ transparent graft resin. This is done through emulsion polymerization in a manner whereby a refractive index of conjugated diene rubber latex is similar to that of a mixture of methylmethacrylate, styrene, acrylonitrile, etc., which are grafted to the conjugated diene rubber latex, and through preparing MSAN copolymer of which a refractive index is similar to that of ~~graft~~ transparent graft resin through bulk polymerization, in order to solve problems of the conventional technologies.

Please amend paragraph 11 (page 4 lines 9-23 and page 4 lines 1-2) as follows:

In order to accomplish the above object, the present invention provides a process for preparing thermoplastic transparent resin comprising the steps of:

- (i) preparing ~~graft~~ transparent graft resin by grafting a monomer mixture comprising 20 to 50 parts by weight of conjugated diene rubber latex, 10 to 50 parts by weight of methacrylic acid alkylester compound or acrylic acid alkylester compound, 5 to 25 parts by weight of aromatic vinyl compound, and 1 to 10 parts by weight of ~~vinyleyan~~ vinyl cyanide compound, by emulsion polymerization;
- (ii) preparing methylmethacrylate-styrene-acrylonitrile (MSAN) copolymer by copolymerizing 50 to 75 parts by weight of methacrylic acid alkylester compound or alkylester compound, 20 to 45 parts by weight of aromatic vinyl compound, and 1 to 10 parts by weight of ~~vinyleyan~~ vinyl cyanide compound during bulk polymerization; and
- (iii) blending the ~~graft~~ transparent graft resin of step i) with the MSAN copolymer of step ii).

Please amend paragraph 14 (page 5 lines 12-16) as follows:

The proper selection of particle diameter and gel content is important since particle diameter, gel content, etc., of conjugated diene rubber latex which is used in preparing ~~graft~~ transparent graft resin of the present invention greatly influence physical properties such as transparency, impact strength, etc., of a product.

Please amend paragraph 16 (page 6 lines 6-21) as follows:

Furthermore, the selection of emulsifiers is important. The selection of emulsifiers which are relatively stable even with pH variation is important since methylmethacrylate monomer causes severe pH variation due to its characteristics thus significantly dropping stability of latex, and its consumed amount should also be minimized to obtain a transparent resin having superior color, and moisture and heat resistance. Problems have occurred when ~~graft~~ transparent graft resin has been prepared with the rubber content being low to maintain stability of latex since stability of latex is greatly reduced depending on pH variations, particularly in the preparation process of ~~graft~~ transparent graft resin having a high rubber content. Furthermore, in order to prepare transparent resin having superior natural color, moisture and heat resistance, etc., by minimizing emulsifiers and coagulants remaining in the final product, the consumed amount of MSAN copolymer prepared through bulk polymerization should be large in a final product so that the consumed amount of ~~graft~~ transparent graft resin prepared by emulsion polymerization can be minimized.

Please amend paragraph 17 (page 6 lines 1-2 and page 7 lines 1-4) as follows:

A process for preparing a thermoplastic transparent resin having superior moisture and heat resistance, natural color, etc., in the present invention can be divided into 1) a preparation process of ~~graft~~ transparent graft resin, 2) a preparation process of MSAN copolymer, and 3) a preparation process of a transparent resin having superior moisture and heat resistance, natural color, etc., by blending ~~graft~~ transparent graft resin and MSAN copolymer.

Please amend paragraph 18 (page 7 lines 6-18) as follows:

The present invention provides a process for preparing a thermoplastic resin having superior moisture and heat resistance, natural color, impact resistance, etc., and extremely superior transparency after preparing a ~~graft~~ transparent graft resin having superior impact resistance through emulsion polymerization by mixing conjugated diene rubber latex having a particle diameter of 2000 to 5000 Å, gel content of 70 to 95%, and a swelling index of 12 to 30 with methacrylic acid alkylester compound, aromatic vinyl compound, ~~vinyleyan~~ vinyl cyanide compound, etc., so that a refractive index of the mixture can be similar to that of conjugated diene rubber latex, preparing a copolymer of methacrylic acid ester compound, aromatic vinyl compound, and ~~vinyleyan~~ vinyl cyanide compound which have similar refractive indexes to that of the ~~graft~~ transparent graft resin through bulk polymerization, and blending the ~~graft~~ transparent graft resin with the copolymer.

Please amend paragraph 20 (page 8 lines 4-13) as follows:

Furthermore, a thermoplastic transparent resin having superior transparency can be prepared when a refractive index of MSAN copolymer which is blended with the ~~graft~~ transparent graft resin is also adjusted to a value which is similar to that of the ~~graft~~ transparent graft resin. Methods for adding each monomer constituent to rubber latex when preparing ~~graft~~ transparent graft resin include a method in which each constituent is input in a batch process, and a method in which the total or partial amount of each monomer constituent is continuously input sequentially. A combined method is used in the present invention in which a batch type and a continuous type of inputting methods are used.

Please amend paragraph 21 (page 8 lines 16-23 and page 9 lines 1-3) as follows:

After putting 100 parts by weight of conjugated diene monomer, 1 to 4 parts by weight of emulsifier, 0.1 to 0.6 parts by weight of polymerization initiator, 0.1 to 1.0 parts by weight of electrolyte, 0.1 to 0.5 parts by weight of molecular weight controlling agent, and 90 to 130 parts by weight of ion exchange water into a reactor in a batch process, the reaction is carried out at a temperature 50 to 65°C for 7 to 12 hours. And then, conjugated diene rubber latex having small diameter particles with ~~an~~ a number average particle diameter of 600 to 1500 Å, gel content of 70 to 95%, and swelling index of about 12 to 30 is prepared by additionally adding a molecular weight controlling agent at 0.05 to 1.2 parts by weight to the reactant, and reacting the resulting mixture at a temperature of 55 to 70°C for 5 to 15 hours.

Please amend paragraph 26 (page 10 lines 18-23 and page 11 lines 1-15) as follows:

20 to 50 parts by weight of conjugated diene rubber latex prepared in the above process are graft copolymerized using 10 to 50 parts by weight of 20 methacrylic acid alkylester compound or acrylic acid alkylester compound, 5 to 25 parts by weight of aromatic vinyl compound, 1 to 10 parts by weight of ~~vinylester~~ vinyl cyanide compound, 0.2 to 0.6 parts by weight of emulsifier, 0.2 to 0.6 parts by weight of molecular weight controlling agent, 0.05 to 0.3 parts by weight of polymerization initiator, etc. Emulsifiers used in the polymerization reaction are one or more salts selected from the group consisting of alkylaryl sulfonate, alkali methylalkyl sulfate, sulfonated alkylester, and a mixture thereof. Tertiary dodecyl mercaptan is mainly used as a molecular weight controlling agent. Redox catalyst which is a mixture of peroxide such as cumene hydroperoxide, diisopropylbenzene hydroperoxide, persulfates, etc., and a reductant such as sodium formaldehyde sulfoxylate, sodium ethylenediamine tetraacetate, primary iron

sulfide, dextrose, sodium pyrroline, sodium sulfite, etc., can be used as a polymerization initiator. A polymerization conversion ratio of latex obtained after terminating the polymerization is 98% or more, and powder is obtained by adding antioxidant and stabilizer to the latex thus coagulating into calcium chloride aqueous solution at a temperature of 80°C or more, dehydrating, and drying the solution. Whether the above prepared graft copolymer is stable or not is determined by measuring a solid coagulating fraction (%) as in the following Formula 1:

Please amend paragraph 29 (page 12 lines 8-20) as follows:

The preparation process of MSAN copolymers is the bulk polymerization process, wherein the copolymers are prepared by controlling methylmethacrylate monomer, styrene monomer, and acrylonitrile monomer in a proper ratio during the preparation of copolymers through bulk polymerization so that refractive indexes of MSAN copolymers can be similar to the refractive index of ~~graft~~ transparent graft resin which is blended with these copolymers. 40 to 70 parts by weight of methylmethacrylate, 10 to 30 parts 15 by weight of styrene, and 1 to 10 parts by weight of acrylonitrile as monomers, 26 to 30 parts by weight of toluene as solvent, and ditertiary dodecyl mercaptan as a molecular weight controlling agent are used. The adding amount of the mixed raw material solution is maintained so that average reaction time is 2 hours, and a reaction temperature of 140 to 170°C is maintained.

Please amend paragraph 31 (page 13 lines 1-5) as follows:

The total refractive index of the copolymer compound should be similar to that of ~~graft~~ transparent graft resin, and a refractive index of the total compound is preferably in the range of 1.513 to 1.521.

3) Preparation process of transparent resin having superior moisture and heat resistance, and natural color.

Please amend paragraph 32 (page 13 lines 6-12) as follows:

After adding MSAN copolymers prepared in the process 2), and filler, antioxidant, and photostabilizer to the ~~graft~~ transparent graft resin prepared in process 1) and blending them, transparent resin pellets having superior moisture and heat resistance, natural color, etc., are prepared using an extruding and blending machine at a temperature of 200 to 230°C. The prepared pellets are again extruded before measuring the physical properties.

Please amend paragraph 37 (page 13 lines 14-17) as follows:

EXAMPLE 1

- 1) Preparation process of ~~graft~~ transparent graft resin
- a) Preparation process of rubber latex having small diameter particles

Please amend paragraph 45 (page 18 lines 5-14) as follows:

After preparing pellets using a biaxial extruder at a temperature of 210°C by putting 0.2 parts by weight of filler, 0.1 part by weight of antioxidant, and 0.1 part by weight of photostabilizer into 45 parts by weight of ~~graft~~ transparent graft resin prepared by the process 1)

and 55 parts by weight of MSAN copolymer prepared by the process 2) and blending them, the pellets were again extruded to prepare transparent resin of which physical properties were measured. Color, moisture and heat resistance, and initial transparency of the resin samples were superior, wherein impact strength was 16, color (value b) was 0.0, initial Haze was 2.3, and Haze deviation after the moisture and heat resistance test was about 5.

Please amend paragraph 46 (page 18 lines 16-23 and page 19 lines 1-8) as follows:

A transparent resin was prepared in the same method as in the EXAMPLE 1 except that 16 parts by weight of methylmethacrylate, 3 parts by weight of styrene and 1 part by weight of acrylonitrile instead of 13.68 parts by weight of methylmethacrylate, 5.32 parts by weight of styrene, and 1 part by weight of acrylonitrile used in the initial stage of c) grafting process of 1) were used, and 31 parts by weight of methylmethacrylate, 7 parts by weight of styrene, and 2 parts by weight of acrylonitrile instead of 27.36 parts by weight of methylmethacrylate, 10.64 parts by weight of styrene, and 2 parts by weight of acrylonitrile used in the later stage of c) grafting process of 1) were used, and its physical properties were measured. Color, and moisture and heat resistance were superior but initial Haze (transparency) was not good in the transparent resin samples, wherein impact strength was 16.5, color (value b) was 0.15, initial Haze was 9.8, and Haze deviation after the moisture and heat resistance test was about 5. The initial transparency deteriorated due to the refractive index difference between ~~graft~~ transparent graft resin and MSAN.



Please amend paragraph 47 (page 19 lines 10-23 and page 20 lines 1-2) as follows:

A transparent resin was prepared in the same method as in the EXAMPLE 1 except that 12 parts by weight of methylmethacrylate, 7 parts by weight of styrene and 1 part by weight of acrylonitrile instead of 13.68 parts by weight of methylmethacrylate, 5.32 parts by weight of styrene, and 1 part by weight of acrylonitrile used in the initial stage of c) grafting process of 1) were used, and 25 parts by weight of methylmethacrylate, 13 parts by weight of styrene, and 2 parts by weight of acrylonitrile instead of 27.36 parts by weight of methylmethacrylate, 10.64 parts by weight of styrene, and 2 parts by weight of acrylonitrile used in the later stage of c) grafting process of 1) were used, and its physical properties were measured. Color, and moisture and heat resistance were superior while initial Haze (transparency) was not good in the transparent resin samples, wherein impact strength was 15.5, color (value b) was 0.1, initial Haze was 9.3, and Haze deviation after the moisture and heat resistance test was about 4. The initial transparency (Haze) deteriorated due to the refractive index difference between ~~graft~~ transparent graft resin and MSAN.

Please amend paragraph 48 (page 20 lines 4-15) as follows:

A transparent resin was prepared in the same method as in the EXAMPLE 1 except that 76 parts by weight of methylmethacrylate, 19 parts by weight of styrene and 5 parts by weight of acrylonitrile instead of 68.4 parts by weight of methylmethacrylate, 26.6 parts by weight of styrene, and 5 parts by weight of acrylonitrile used in the 2) preparation process of MSAN copolymer were used, and its physical properties were measured. Color, and moisture and heat resistance were superior while initial Haze (transparency) was not good in the transparent resin samples, wherein impact strength was 16, color (value b) was 0.15, initial Haze

was 9.4, and Haze deviation after the moisture and heat resistance test was about 5. The initial transparency (Haze) deteriorated due to the refractive index difference between ~~graft~~ transparent graft resin and MSAN.

Please amend paragraph 49 (page 20 lines 17-23 and page 21 lines 1-5) as follows:

A transparent resin was prepared in the same method as in the EXAMPLE 1 except that 64 parts by weight of methylmethacrylate, 31 parts by weight of styrene and 5 parts by weight of acrylonitrile instead of 68.4 parts by weight of methylmethacrylate, 26.6 parts by weight of styrene, and 5 parts by weight of acrylonitrile used in the 2) preparation process of MSAN copolymer were used, and its physical properties were measured. Color, and moisture and heat resistance were superior while initial Haze (transparency) was not good in the transparent resin samples, wherein impact strength was 15.5, color (value b) was 0.1, initial Haze was 9.9, and Haze deviation after the moisture and heat resistance test was about 5. The initial transparency (Haze) deteriorated due to the refractive index difference between ~~graft~~ transparent graft resin and MSAN.

Please amend paragraph 54 (page 23 lines 17-23 lines 1-11) as follows:

Furthermore, after preparing pellets using a biaxial extruder at a temperature of 210°C by putting 0.2 parts by weight of filler, 0.1 part by weight of antioxidant, and 0.1 part by weight of photostabilizer into 100 parts by weight of powder obtained in the 1) preparation process of ~~graft~~ transparent graft resin without a preparation process of MSAN copolymer and blending them, the pellets were again extruded to prepare transparent resin of which physical properties were measured. Color was not good, and moisture and heat resistance, etc., were also

deteriorated in the transparent resin samples, wherein impact strength was 16.5, color (value b) was 3.2, initial Haze was 4.9, Haze deviation after the moisture and heat resistance test was about 12.

Please amend paragraph 55 (page 23 lines 12-23 and page 24 lines 1-4) as follows:

A preparation process of thermoplastic transparent resin according to the present invention can prepare a thermoplastic transparent resin having excellent impact resistance, chemical resistance, processibility, etc., superior moisture and heat resistance, natural color, etc., and extremely superior transparency after preparing a ~~graft~~ transparent graft resin having superior impact resistance, transparency, etc., through emulsion polymerization by employing methylmethacrylate and controlling contents and mixing ratios of each constituent employed so that the refractive index of conjugated diene rubber latex can be similar to that of a mixture of methylmethacrylate, styrene, acrylonitrile, etc., which are grafted to the conjugated diene rubber latex in preparing acrylonitrile-butadiene-styrene (ASS) resin comprising acrylonitrile providing superior chemical resistance, butadiene providing superior impact resistance, and styrene providing superior processibility, preparing an MSAN copolymer of which the refractive index is similar to that of ~~graft~~ transparent graft resin in the emulsion polymerization process, and blending the ~~graft~~ transparent graft resin with the MSAN copolymer.